XI. ACCOUNT OF A SKELETON OF A GORILLA REMARKABLE BECAUSE SHOWING RECOVERY FROM GUNSHOT WOUNDS.

By W. J. Holland.

(Plates XXXIX—XL)

In the year 1886 I purchased from my friend, the late Rev. Dr. A. C. Good, the skin and skeleton of a Gorilla, killed by a native hunter at Kangvé on the Ogové River. Dr. Good had secured the specimen from the native and had carefully prepared the skin and roughed out the skeleton. The latter was mounted for me by the firm of Ward at Rochester, N. Y., and subsequently the skin was mounted by Mr. F. S. Webster. The mounts were transferred to the Carnegie Museum in the year 1898, and bear the Accession No. 406 (1-2). The specimen is a male, but not especially large in size. The skeleton, as mounted, measures from the base of the astragulus to the top of the occipital crest 147.5 cm., the width across the upper extremities of the humeri is 41.75 cm., the length of the right arm (uninjured) from the top of the humerus to the tip of the middle finger is 101.5 cm., the length of the left arm (injured), measured in the same way, is 97.75 cm. The difference in the length of the arms, due to the injury of the left arm is therefore approximately 3.75 cm. or about 1.5 inches.

The animal, before receiving its *coup de grace* by the native, who killed it, had long before been injured and its left arm broken by a discharge of buck-shot. The injuries indicate that the creature was probably in a tree at the time it was shot, and that the hunter fired from below at no great range. The direction of the paths of the balls which can be traced is from below upward. Their course makes it inconceivable that the shot was received by the animal when upon the ground.

One shot creased the top of the articulating upper surface of the humerus for about three-fourths of its diameter, but did not go through the capsule of the joint. The groove made by the ball terminates in a rounded cavity, where the ball stopped. There is

some evidence that the ball may have been lodged there for some time. It may have even been there at the time the animal was finally killed, and been lost when the skeleton was being prepared for shipment to America. It may, however, at an earlier date have worked out of the joint and lodged itself elsewhere. At all events this ball is lost, though the injury it inflicted on the upper articulating surface of the humerus is well marked.

Another ball struck the front of the shaft of the bone about 55 mm. below the articulating surface of the humerus and passed through, emerging behind about 10 mm. below the epiphysial suture. By passing a splint through the latter wound and laying a splint in the groove on the top of the humerus the paths of the two balls are seen to have been exactly parallel.

One or more balls struck the shaft about 90 mm. below the epiphysial suture and the shaft was transversely fractured, the break being on a plane lying at an acute angle with the axis of the shaft. The lower moiety of the shaft, as a consequence of this fracture, slipped upward, overlapping the anterior part of the shaft by the amount of displacement which has already been noted, that is to say about 3.75 cm. At the break a rather wide interval between the two broken surfaces, about 26 mm. in width, exists. This interval has been more or less solidly filled in by osseous material, which is more or less spongy in structure, but extensively overlaid in places by smooth or finely striated lamellæ of bone, corresponding in appearance to the outer surface of the uninjured parts of the humerus. The spongy character of the interpolated bony material is more plainly visible at the lower end of the infiltrated mass than at the upper end. A few small openings, not bridged over by the bony deposit, are visible. Whether, in case the animal had lived longer, these lacunæ would have ultimately been filled up, it is hard to say. Here and there on the outer surface of the bony deposit appear depressed vermiculate channels, which mark the location of arteries and veins, which nourished the deposit during its growth. These represent the more or less shattered branches of veins and arteries which had been injured at the time when the creature was wounded, but had eventually resumed their functions.

The periosteum both above and below the break seems to have acted normally, but, where disturbed at the place of fracture, its activities were greatly stimulated.

In the plexus of bony material at its lowest extremity imbedded in the spongy tissue of the newly formed bony mass is firmly lodged one of the flattened buck-shot, which the animal received in its arm at the time of injury.

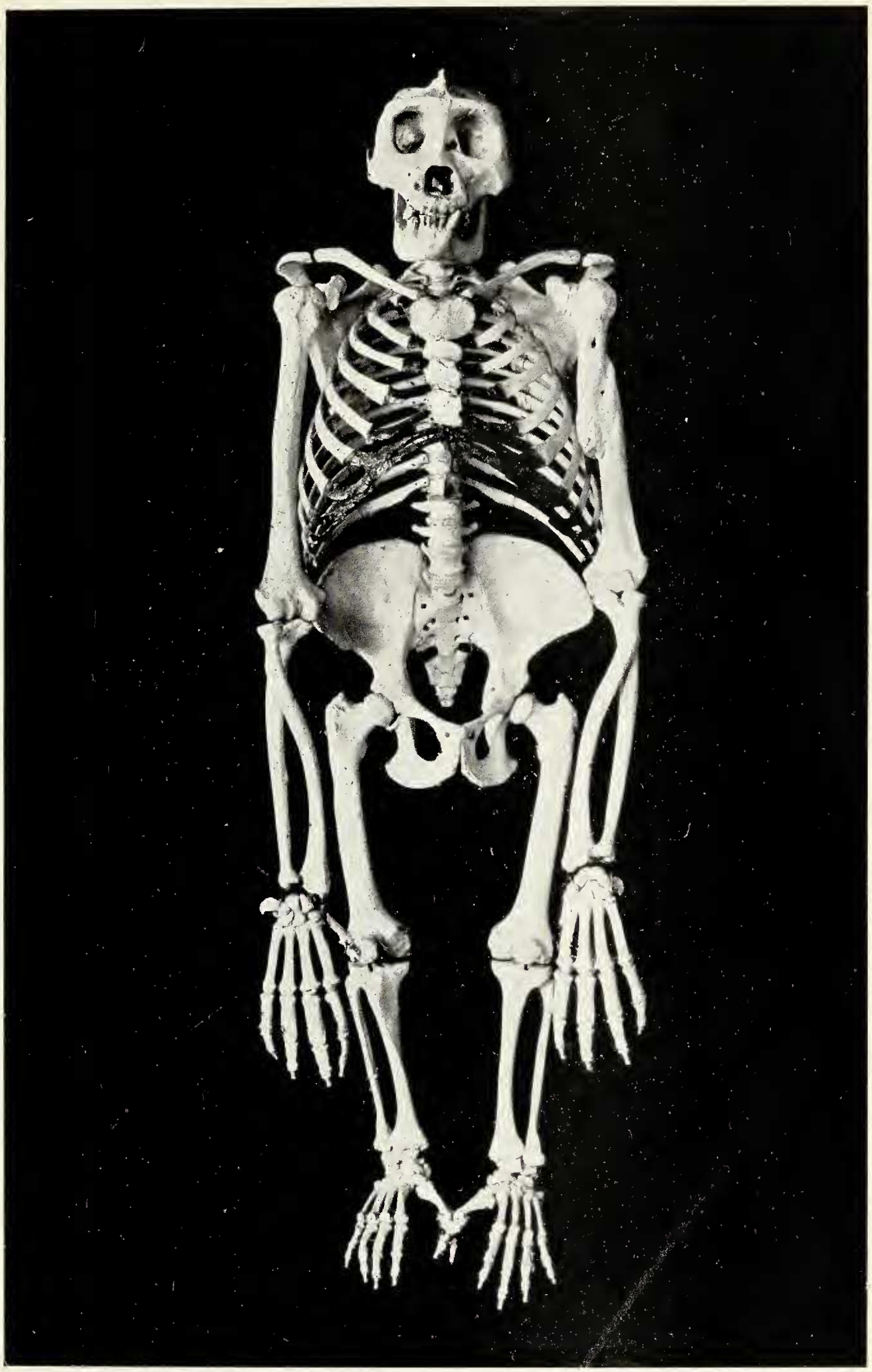
There are evidences of considerable inflammation in the upper joint of the arm, and, while the animal eventually recovered from its wound and was shot at a later date by a ball which penetrated the cranium at the inner angle of the left eye, it may be doubted whether the creature ever entirely recovered the full use of the left arm. The injuries received by the synovial membrane at the upper joint of the humerus and the (at least temporary) lodgment within the capsule of a buck-shot must have caused more or less inflexibility of the joint. This fact in itself may have contributed to the remarkable healing of the fracture, which left the injured arm only a little shorter than its fellow, so little shorter that a casual inspection of the mounted skeleton (See Plate XXXIX) hardly fails to reveal at first glance a difference in the length of the two arms.

An examination of the specimen reveals an extensive exostosis about the neck and on the inner surface of the great trochanter of the right femur. Several of my medical and surgical friends have suggested that this may be due to syphilitic infection. I do not, however, recall at the moment of writing any mention in the literature of the subject of authenticated cases of syphilis among the anthropoid apes, and am inclined to believe that the diseased condition at this point was due to local inflammation, possibly rheumatic in its origin.

On Plate XXXIX, accompanying this brief paper, I give a figure of the mounted skeleton, and on Plate XL views of the injured humerus. A study of these figures shows that the *vis medicatrix naturæ* has asserted itself in bringing about a recovery of the shattered bone, which might have done credit, if not to the most skilful surgeon, at least to some of those who practice the art. The animal made a good recovery from the fracture, which must have antedated its death by a considerable lapse of time. The dentition shows that the creature was more than fully adult, its teeth being well worn, suggesting that at the time of its death it was approaching the limits of gorillan age.

The study of the injuries received by this animal remind us that disease is not confined to human beings, and that, were it not for the healing power of nature, the evidence of which is constantly repeating

itself in the course of our investigations, it is quite possible that the sum of being on this globe would be much less today than it actually is. In fact in far-back ages the same vital forces, which repaired the break in the bone of this gorilla, repaired breaks of the limbs of reptiles and mammals long since extinct, which lived in Mesozoic and early Tertiary times. We have numerous specimens in our paleontological collections in the Carnegie Museum, which, like this skeleton of a gorilla, reveal the healing of bones broken, some of them millions of years ago.



Skeleton of *Gorilla*.

EXPLANATION OF PLATE XL.

FIG. 1. Anterior view of injured left arm of Gorilla.

a. Flattened buck-shot imbedded in newly formed bony tissue.

b. Hole made in shaft by buck-shot, the exit of which is shown in Fig. 2 at *c*.

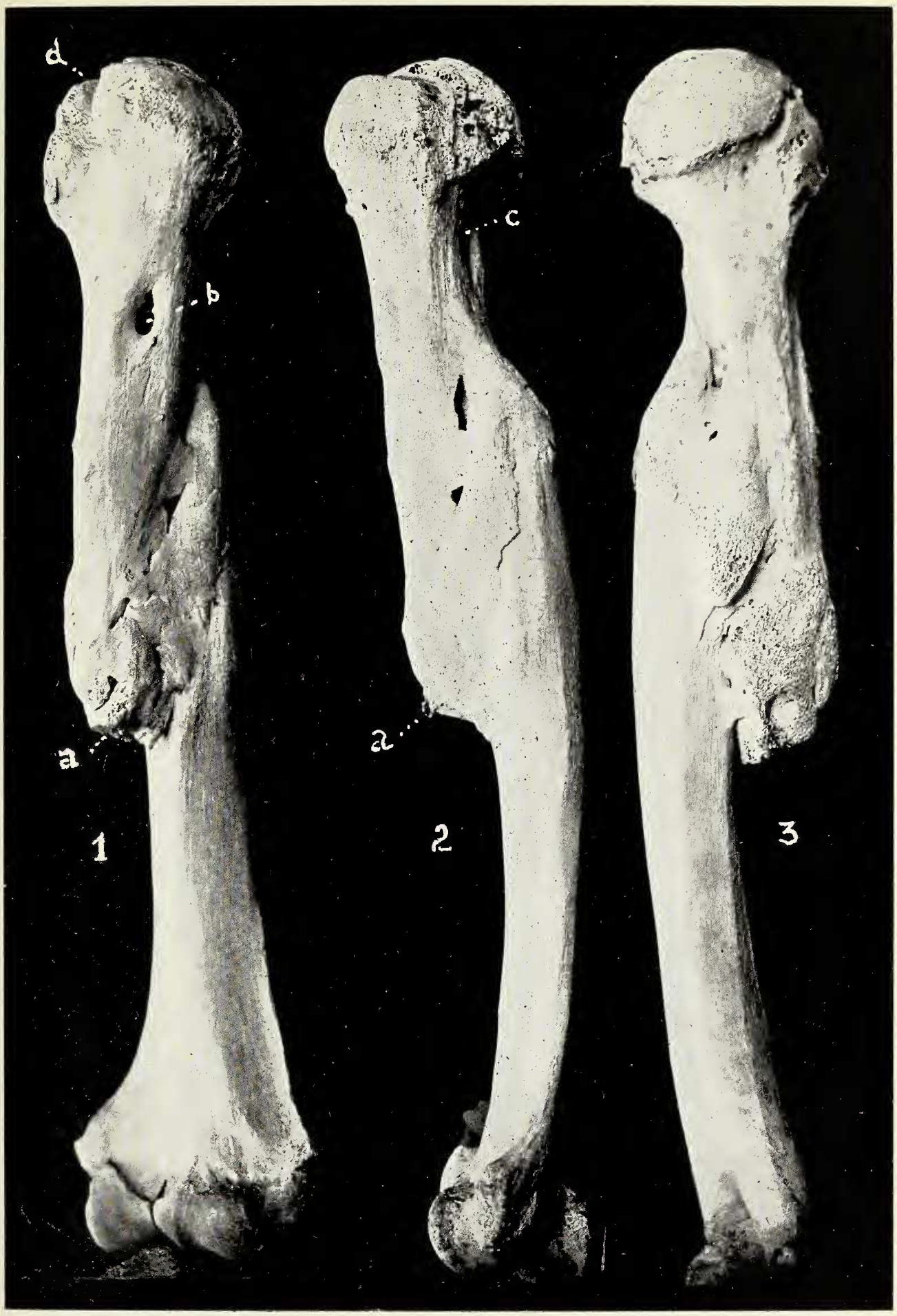
d. Groove made by buck-shot on upper surfaceof the proximal end of humerus.

FIG. 2. Lateral view of the same bone.

a. Buck-shot imbedded in bony tissue.

c, Vacuity left by exit of ball, which entered shaft at the point marked *b* in Fig. 1.

FIG. 3. Postero-internal view of injured left arm of Gorilla.



Injured Left Humerus of *Gorilla*.